

**What is claimed is:**

1. A barcode scanner comprising:

a polygon including generally planar walls arranged in a ring having first mirrored facets facing generally towards a center of the ring and second mirrored facets facing generally away from the center of the ring;

wherein the first and second mirrored facets direct a laser beam to produce a scan pattern.

2. A barcode scanner comprising:

a polygon including planar walls arranged in a ring having first mirrored facets facing generally towards a center of the ring and second mirrored facets facing generally away from the center of the ring;

a first laser mounted inside the ring for producing a first laser beam;

a first collector mounted inside the ring for collecting first light reflected from an item;

a second laser mounted outside the ring for producing a second laser beam;

a second collector mounted outside the ring for collecting second light reflected from the item;

a number of detectors for converting the first and second light from the first collector into electrical signals; and

pattern mirrors for creating a scan pattern from the first and second laser beams;

wherein the first mirrored facets direct the first laser beam towards the pattern mirrors and direct the first light towards the first collector; and

wherein the second mirrored facets direct the second laser beam towards the pattern mirrors and direct the second light towards the second collector.

3. The barcode scanner of claim 2, wherein the polygon comprises eight walls, including eight first mirrored facets and eight second mirrored facets.

4. The barcode scanner of claim 2, wherein the polygon rotates.

5. The barcode scanner of claim 2, wherein the pattern mirrors comprise:

- a first group of pattern mirrors for reflecting the first laser beam; and

- a second group of pattern mirrors for reflecting the second laser beam.

6. The barcode scanner of claim 2, further comprising:  
a third laser mounted outside the ring for producing a third laser beam; and

- a third collector mounted outside the ring for collecting third light reflected from the item.

7. The barcode scanner of claim 6, wherein the pattern mirrors comprise:

- a first group of pattern mirrors for reflecting the first laser beam;

- a second group of pattern mirrors for reflecting the second laser beam; and

- a third group of pattern mirrors for reflecting the third laser beam.

8. The barcode scanner of claim 2, wherein the pattern mirrors comprise:

a rotatable pattern mirror for adjusting the scan pattern.

9. The barcode scanner of claim 2, wherein the pattern mirrors comprise:

a first primary pattern mirror for reflecting the first laser beam;

a second primary pattern mirror for reflecting the second laser beam; and

a secondary pattern mirror for reflecting the first and second laser beams to produce the scan pattern.

10. The barcode scanner of claim 9, wherein the secondary pattern mirror is rotatable for adjusting the scan pattern.

11. The barcode scanner of claim 6, wherein the pattern mirrors comprise:

a first primary pattern mirror for reflecting the first laser beam;

a second primary pattern mirror for reflecting the second laser beam;

a third primary pattern mirror for reflecting the third laser beam; and

a secondary pattern mirror for reflecting the first, second, and third laser beams to produce the scan pattern.

12. The barcode scanner of claim 4, further comprising:  
a motor for rotating the polygon.

13. The barcode scanner of claim 2, further comprising:  
control circuitry for obtaining barcode information  
from the electrical signals from the number of detectors.

14. The barcode scanner of claim 2, wherein the number  
of detectors comprise first and second detectors.

15. The barcode scanner of claim 2, wherein the first  
detector converts the first light into first electrical  
signals and the second detector converts the second light  
into second electrical signals.

16. A barcode scanner comprising:

a polygon including generally planar walls having first  
mirrored facets arranged in a ring facing generally towards  
a center of the ring and second mirrored facets facing  
generally away from the center of the ring;

a first laser mounted inside the ring for producing a  
first laser beam;

a first collector mounted inside the ring for  
collecting first light reflected from an item;

a second laser mounted outside the ring and to a first  
side of the polygon for producing a second laser beam;

a second collector mounted outside the ring and to the  
first side of the polygon for collecting second light  
reflected from the item;

a third laser mounted outside the ring and to a second  
side of the polygon for producing a third laser beam;

a third collector mounted outside the ring and to the  
third side of the polygon for collecting third light  
reflected from the item;

a first detector for converting the first light from the first collector into first electrical signals;

a second detector for converting the second and third light from the second and third collectors into second and third electrical signals;

a first primary pattern mirror for reflecting the first laser beam;

a second primary pattern mirror for reflecting the second laser beam;

a third primary pattern mirror for reflecting the third laser beam; and

a secondary pattern mirror for reflecting the first, second, and third laser beams to produce the scan pattern;

wherein the first mirrored facets direct the first laser beam towards the first primary pattern mirror and direct the first light towards the first collector;

wherein the second mirrored facets direct the second laser beam towards the second primary pattern mirror and direct the second light towards the second collector; and

wherein the third mirrored facets direct the third laser beam towards the third primary pattern mirror and direct the third light towards the third collector.

17. A barcode scanner comprising:

a housing having an aperture;

a polygon in the housing at a first end having a centerline oriented generally parallel to the aperture and including generally planar walls arranged in a ring having first mirrored facets facing generally towards the centerline and second mirrored facets facing generally away from the centerline;

a first laser mounted inside the ring for producing a first laser beam;

a first primary collector mounted inside the ring for collecting first light reflected from an item;

a second laser in the housing and adjacent the second mirrored facets of the facets for producing a second laser beam;

a second primary collector in the housing and adjacent the second mirrored facets of the facets for collecting second light reflected from the item;

a first secondary collector at a second end of the housing opposite the first end of the housing for reflecting light from the first primary collector;

a second secondary collector at the second end of the housing for reflecting light from the second primary collector;

a number of detectors at the second end of the housing for converting the first and second light from the first and second secondary collectors into electrical signals;

first primary pattern mirrors in the housing adjacent the first mirrored facets of the ring for reflecting the first laser beam;

second primary pattern mirrors in the housing adjacent the second mirrored facets of the ring for reflecting the second laser beam; and

a secondary pattern mirror at the second end of the housing for reflecting the first and second laser beams through the aperture to produce the scan pattern;

wherein the first mirrored facets direct the first laser beam towards the first primary pattern mirrors and direct the first light towards the first primary collector; and

wherein the second mirrored facets direct the second laser beam towards the second primary pattern mirrors and direct the second light towards the second primary collector.

18. A polygon for a barcode scanner comprising:  
generally planar walls arranged in a ring having first mirrored facets facing generally towards a center of the ring and second mirrored facets facing generally away from the center of the ring;

wherein the first and second mirrored facets direct a laser beam to produce a scan pattern.

19. The polygon of claim 18, further comprising a generally planar base portion coupled to each of the facets.

20. The polygon of claim 19, wherein the base portion is suitable for attachment to a motor for spinning the polygon.

21. The polygon of claim 19, wherein the facets are oriented at obtuse angles to the base portion.

22. A method of scanning an item having a barcode label comprising the steps of:

directing a first laser beam at inward facing mirrored facets of a ring of walls of a polygon;

directing a second laser beam at outward facing mirrored facets of the ring;

reflecting the first laser beam by the inward facing mirrored facets to form first scan lines of a scan pattern;  
and

reflecting the second laser beam by the outward facing mirrored facets to form second scan lines of a scan pattern.

23. A method of scanning an item having a barcode label comprising the steps of:

directing a first laser beam at inward facing mirrored facets of a ring of walls of a polygon;

directing a second laser beam at outward facing mirrored facets of the ring;

reflecting the first laser beam by the inward facing mirrored facets towards a first set of pattern mirrors;

reflecting the second laser beam by the outward facing mirrored facets towards a second set of pattern mirrors;

reflecting the first laser beam by the first set of pattern mirrors to form first scan lines of a scan pattern;

reflecting the second laser beam by the second set of pattern mirrors to form second scan lines of the scan pattern;

collecting first light from the item by the first set of pattern mirrors;

collecting second light from the item by the second set of pattern mirrors;

directing the first light towards the inward facing mirrored facets of the polygon by the first set of pattern mirrors;

directing the second light towards the outward facing mirrored facets of the polygon by the second set of pattern mirrors;

reflecting the first light towards a first collector inside the ring by the inward facing mirrored facets of the polygon;



reflecting the second light towards a second collector outside the ring by the outward facing mirrored facets of the polygon;

directing the first light towards a first detector by the first collector;

directing the second light towards a second detector by the second collector;

converting the first light into first electrical signals by the first detector;

converting the second light into second electrical signals by the second detector; and

obtaining barcode label information from the first and second electrical signals by control circuitry.